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Spring Newsletter (March/April)

Psychophysiological Self-Regulation: Theory & Practice
Submission Deadline: February 15, 1992

Election results for officers of the Society (through June of 1992):

Elmer Green, Ph.D., President; T. M. Srinivasan, Ph.D., President-Elect;
Carol Schneider, Ph.D., Treasurer; Stephan A. Schwartz, Vice-President.
C. Penny Hiernu will continue to serve as Secretary.

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Hemi-Sync and Addiction Treatment

Leslie France

The Monroe Institute Hemi-Sync technology is based on the natural functioning of the brain. We know that the brain produces patterns of electrical activity (brain waves), and that different brain-wave rhythms are indicative of different states of consciousness. It is also scientifically verifiable that sound can influence brain waves—and thereby influence consciousness.

Further, specific combinations and sequences of sound can lead the brain/mind into states such as deep relaxation, sleep, or keen alertness. The Hemi-Sync Technology is patented by the Monroe Institute*

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Frequency Following Response (FFR) is essentially a process of entrainment whereby, when a listener's audio environment is dominated by sounds of specific frequencies, the listener tends to reproduce those frequencies within his/her own physiology. Further, the listener can become entrained to the state of awareness engendered by those frequencies. Over time, individuals can learn to reproduce the state at will without continuous external audio stimulation.

Hemi-Sync is a noninvasive technology based on two fundamental, naturally occurring auditory phenomena: both FFR and binaural beat stimulation. Binaural ("two-ears") beats are produced within the physiology of a listener when different audio frequencies are introduced into each ear. The brain-mind discerns this difference and strives to bridge the gap. It therefore produces a third frequency, which is the difference between the two, and which is not an actual sound but may be perceived as an oscillating sound. To cite an example: If 100 Hz (cycles per second) is introduced into the left ear, and 104 Hz is introduced into the right, the binaural beat frequency will be 4 Hz.

The beauty of a binaural beat system is that: (a) it provides the opportunity for a listener to be influenced by frequencies below the threshold of normal human hearing (we generally have trouble hearing sounds below 40 Hz) and, (b) it tends to stimulate a state of low-frequency brain-wave

interhemispheric synchronization. The results of such synchrony include an amplification in the attention a listener is able to apply while in this state. Although interhemispheric synchronization occurs naturally, it is usually intermittent and of limited duration. Binaural beat stimulation aids the listener to sustain it, thereby greatly increasing one's ability to maintain a unique focus of attention over relatively long periods of time.

Hemi-Sync works with beat frequencies primarily in the beta, alpha, theta, and delta ranges. For more than a quarter-century, The Monroe Institute has been identifying and evaluating the effects of these sound patterns, blending them into complex combinations which have proven effects upon mental states.

A technical paper (Atwater, 1988) is available from The Monroe Institute which describes the physics of resonant entrainment, brain waves and their relationship to the behavioral physiology of consciousness and the physiology of the brain.

Among the areas which have been researched using many of the Institute's more than 200 Hemi-Sync tapes are: focussing attention, sleep, deep meditation, relaxation, pain management, speech anxiety and addiction control.

This paper will review the research done by Bogdan F. Maliszewski, M.D. on the use of Hemi-Sync tape *H(uman) Plus Relax* in the treat-

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ment of alcohol and cocaine abusers. The *Human Plus* tape series is designed to help the trainee establish control and enhance self function. Each of the tapes teaches opening and using an access channel which transmits communication to all levels of awareness; physical, mental and emotional. With the access channel open, the trainee anchors a specific brain-body state to a short verbal cue, or function command. The desired state can then be re-created at will simply by using the function command during daily activities. *H-Plus Relax* is used to teach relaxation using a highly participatory system which, through practice, enables the trainee to relax at will during daily activities. This active, participatory series is in contrast to the *Metamusic* relaxation tape which simply creates an auditory environment that facilitates a state of relaxation as the trainee passively listens. *H-Plus Relax* facilitates alpha-theta enhancement in trainees, and this has been measured in EEG work at The Monroe Institute.

This work using *H-Plus Relax* with addicts was done between 1987 and 1989 when Dr. Maliszewski was attending physician at the Glenbeigh Hospital in Tampa, a rehabilitation and treatment center for alcohol and drug abuse.

The standard treatment program was based on the traditional twelve-step Alcoholics Anonymous recovery program. An average stay in the hospital was about one month, and patient age ranged from early teens to over seventy

years old. In the older group, alcoholism was the most prevalent dependency; in the younger group, the most popular was cocaine, then marijuana, alcohol, and opiates. About twenty patients participated in the program each month; an approximate total of 300 for the year.

Prior to the inclusion of Hemi-Sync in the treatment program the success rate, based on sobriety for at least one year after treatment, was best for alcohol, reaching about fifty percent of the patients, but poor for cocaine, achieving only twenty-five percent or less. These percentages correspond to the national average recovery rates.

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Dr. Maliszewski decided to add the Hemi-Sync tape *H-Plus Relax* based on his knowledge of brain function in addicts. With alcoholism, it has been found that brain activity in alcoholics differs from that of nonalcoholics, as measured on an electro-encephalogram (EEG). Alcoholics show a prevalence of fast beta activity and a deficit of alpha and theta frequencies. Their sleep is shallow, lacking the delta waves characteristic of deep sleep. The excess of beta frequencies on EEG is associated with feelings of anxiety, restlessness, nervous tension, and inability to relax.

Alcohol's influence on the brain is very characteristic: the number of alpha waves in the brain increase greatly, but only in alcoholics. In nonalcoholics this action is very limited. Thus, it becomes clear that many alcoholics drink to increase alpha, which is correlated with feelings of decreased stress and anxiety and increased relaxation. Increase in alpha is also correlated with decreased beta wave activity in EEG.

With cocaine addiction, dopamine, another important neurotransmitter, becomes depleted, causing severe depression. This is preceded by a feeling of very strong euphoria which lasts only briefly. Later on, after treatment attempts, recall of that euphoria is the main cause of relapse and subsequent return to use. Cocaine is a stimulant and causes an increase in Beta frequencies on EEG.

It occurred to Maliszewski that if alcoholics and patients addicted to cocaine were trained to increase the proportion of alpha and theta waves in their EEGs, they would increase the chance of recovery. This could be achieved by biofeedback, massage, sports, meditation, and restricted environment stimulation therapy (REST), among other approaches.

However, it seemed that the Hemi-Sync technology would probably be one of the most effective and easiest methods to use in the hospital setting. Direct action of Hemi-Sync on the brain provides an excellent therapeutic tool. Experience of positive states of mind, not achieved by alcohol or drugs, would reinforce the patient's ability to cope with stress and the craving for alcohol and drugs. In medicine, it is relatively easy to cope with stress

Hemi-Sync

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and anxiety by using tranquilizers like Xanax, Valium, etc., but only for a short time. These medicines, if used for longer periods, also lead to chemical dependency. They are external means of relaxing and do not lead to the patient's own ability to achieve a relaxed state through self-regulation.

*Dr. Maliszewski
encourages
more controlled
studies
among professionals
in the
field of addiction
medicine.*

In his study, Dr. Maliszewski played the *PREP* side of the *Relax* tape from the *H-Plus* series in a group setting, on an average of three times weekly. This tape teaches a variety of mental tools to facilitate the listener's taking control of thoughts and actions, induces a state of profound relaxation followed by a period of sleep, and leaves the listener wide awake, feeling refreshed and energetic.

With the exception of the cocaine addicts, patients were exposed to the tapes after stressful group therapy sessions. Before the tape, the cocaine-addicted group participated in special desensitization sessions involving exposure to the paraphernalia of cocaine use—

pipes, white powder resembling cocaine, etc. They even pretended to use cocaine to evoke the craving for this powerful stimulant.

Overall, patients responded very positively to the tapes. At first, most of them fell asleep during the sessions, although many suffered from chronic insomnia caused by the drugs. Later, the patients participated more consciously in the relaxation exercise. Some of them used the tapes individually, in their free time. After completion of the treatment program, they had the option of purchasing *H-Plus Relax* to use at home. Perhaps ten to fifteen percent exercised this option.

The results of the one-year follow-up were very encouraging. The recovery rate for cocaine patients doubled from twenty-five to fifty percent who were drug-free one year after treatment. The rate of recovery improved with alcoholic patients also, though not so dramatically.

In addition to the success of Hemi-Sync intervention, the study also demonstrated that attitude toward the therapy was very important. More spiritually oriented patients responded better to the treatment program, and were encouraged by Dr. Maliszewski to use additional Hemi-Sync tapes, such as *Focus 10* and *Focus 12* exercises. *Pain Control* was used with positive results by sufferers from chronic pain. *De-Hab*, a Hemi-Sync tape which supports the elimination of obsessive/compulsive thinking, was used by others.

While Dr. Maliszewski concluded that the Hemi-Sync technology can be an effective treatment of chemically-dependent patients, he also encouraged more controlled studies

among professionals in the field of addiction medicine.

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*An original patent in the field of altering brain states through sound was issued in 1975 to Robert Monroe and The Monroe Institute. His unique contribution is called the Frequency Following Response (or FFR).

Editor's Note: Many comments can be made on the research project discussed in this article. Obviously it qualifies as a pilot or exploratory study for the following reasons:

1. *No control group of addicts who did not receive the Hemi-Sync training in those two years is included. Even though the recovery rates for this hospital in the years prior to the inclusion of this new component of treatment can serve as a baseline of comparison, there is always a chance that the experimenter's excitement about the new treatment stimulates the rest of the staff to new enthusiasm and the energized program gets better results, not the specific new treatment.*
2. *The cocaine addicts showed a more enhanced recovery rate than did the alcoholics, but the experimental conditions before the training were different for the two groups. If the alcoholics had had similar stimulation of their craving to drink before the Hemi-Sync treatment sessions, the results might have been more comparable.*
3. *Some addicts used the tapes for out of session practice and some did not. Some were enthused enough to buy the tape for continued practice and some did not buy them. Probably there was a correlation between the amount of practice and whether or not alpha was entrained. It would be useful to know which patients were really trained by the tapes and which just heard them but were not trained. The recovery rates in these two groups could then be compared with a control group. When evaluating any method, it is very important to look at the training effect or your results may appear spuriously low.*

Hopefully, further research will study these points. The method appears promising, as it is a relatively low cost addition to an inpatient program—and encourage self-regulation of enhanced alpha states.